

## PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION  
(PCT Rule 61.2)

Date of mailing (day/month/year)  
29 May 1998 (29.05.98)

To:  
United States Patent and Trademark  
Office  
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in its capacity as elected Office

International application No.  
PCT/GB97/02863

Applicant's or agent's file reference  
MPS/6399INT

International filing date (day/month/year)  
17 October 1997 (17.10.97)

Priority date (day/month/year)  
17 October 1996 (17.10.96)

Applicant

PLUMMER, Nigel, Terrence

1. The designated Office is hereby notified of its election made:

in the demand filed with the International Preliminary Examining Authority on:

13 May 1998 (13.05.98)

in a notice effecting later election filed with the International Bureau on:

\_\_\_\_\_

2. The election  was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

P. Asseeff

Telephone No.: (41-22) 338.83.38



## PATENT COOPERATION TREATY

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|-------|-------------|
| REC'D | 20 NOV 1998 |
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## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

|   |   |   |  |
|---|---|---|--|
| Applicant's or agent's file reference<br><b>MPS/6399INT</b>                                     | <b>FOR FURTHER ACTION</b>                                       |   | See Notification of Transmittal of International Preliminary Examination Report (PCT/IPEA/416) |
| International application No.<br><b>PCT/GB97/02863</b>  | International filing date (day/month/year)<br><b>17/10/1997</b> | Priority date (day/month/year)<br><b>17/10/1996</b> |  |
| International Patent Classification (IPC) or national classification and IPC<br><b>A61K9/20</b> |   |   |  |
| Applicant<br><b>CULTECH LIMITED et al.</b>  |   |   |  |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 1 sheets.

3. This report contains indications relating to the following items:

- I    Basis of the report
- II    Priority
- III    Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV    Lack of unity of invention
- V    Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI    Certain documents cited
- VII    Certain defects in the international application
- VIII    Certain observations on the international application

|  |   |
|--|---|
| Date of submission of the demand<br><b>13/05/1998</b>  | Date of completion of this report<br><b>17.11.98</b>                      |
| Name and mailing address of the IPEA/<br><br>European Patent Office<br>D-80298 Munich<br>Tel. (+49-89) 2399-0, Tx: 523656 epmu d<br>Fax: (+49-89) 2399-4465 | Authorized officer<br><br>Toulacis, C<br>Telephone No. (+49-89) 2399-8638 |





**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB97/02863

**I. Basis of the report**

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

**Description, pages:**

1-5                   as originally filed

**Claims, No.:**

1-10                  as originally filed

11-18                as received on                   06/08/1998 with letter of           04/08/1998

**Drawings, sheets:**

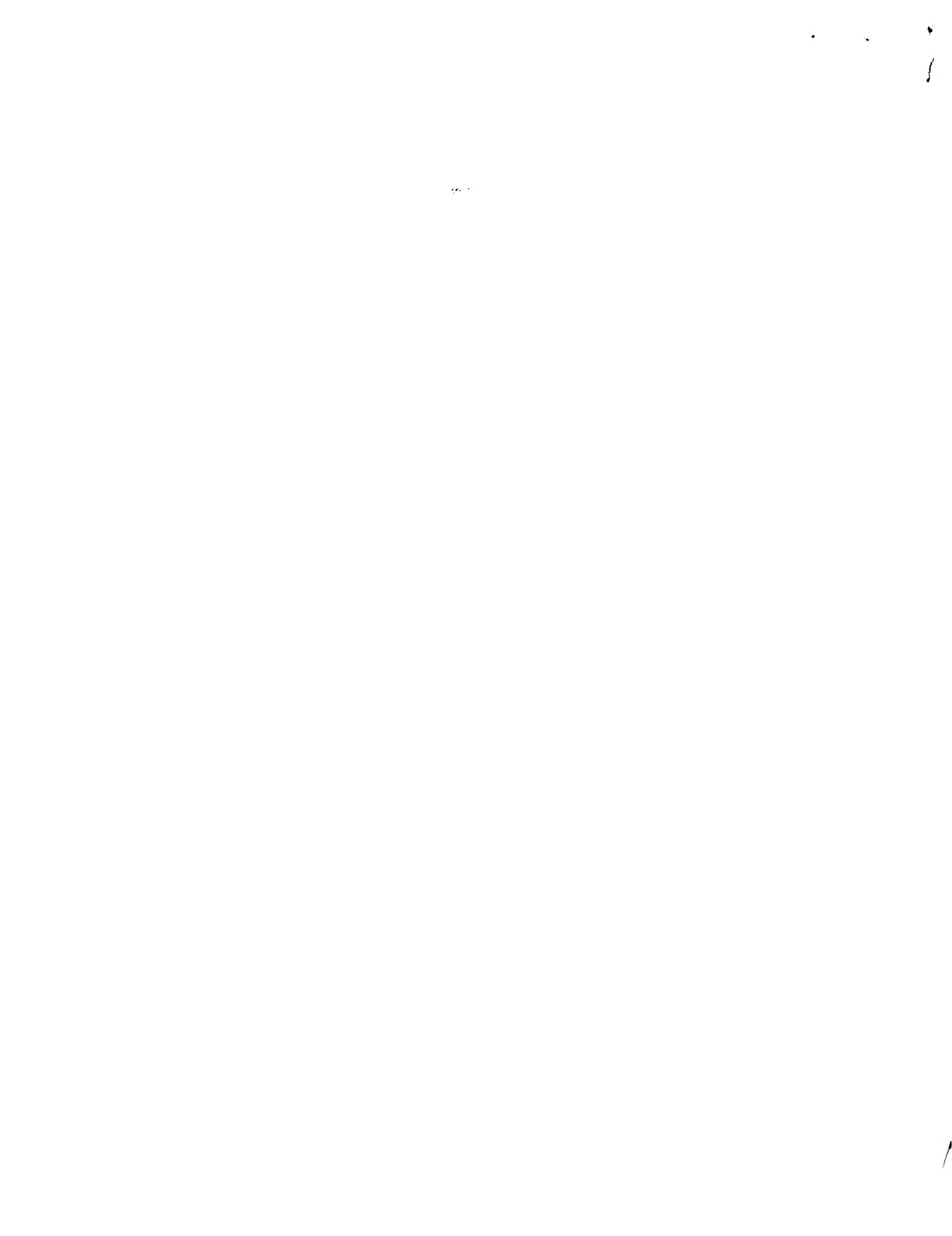
1/1                  as originally filed

2. The amendments have resulted in the cancellation of:

the description,      pages:  
 the claims,           Nos.:  
 the drawings,        sheets:

3.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB97/02863

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

|                               |      |             |
|-------------------------------|------|-------------|
| Novelty (N)                   | Yes: | Claims 1-18 |
|                               | No:  | Claims      |
| Inventive step (IS)           | Yes: | Claims 1-18 |
|                               | No:  | Claims      |
| Industrial applicability (IA) | Yes: | Claims 1-18 |
|                               | No:  | Claims      |

**2. Citations and explanations**

**see separate sheet**



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB97/02863

**V**

(N) A method for preparing a vitamin product, wherein the vitamin is added to a wet carrier to form a mix which is subsequently freeze-dried (claim 1), and a vitamin delivery product comprising an ingestible freeze-dried mix of at least one vitamin and a carrier (claim 11), is not disclosed in the documents cited in the search report.

(IS) The object of the present application is to provide a vitamin product which is palatable without comprising considerable amounts of excipients (description, page 1, § 3 and §4; page 2, §2).  
Said object has been achieved by providing a freeze-dried product of a mixture of vitamins and wet carrier, such as fruit juice and/or fruit pulp.  
Document EP-A-0 450 141 (D1), which is considered to represent the nearest prior art, discloses a carrier material for administration of drugs, nutrients, vitamins, biologically-active materials, foodstuffs and combinations thereof.  
However, freeze-drying is not suggested (see D1; column 3, lines 23-37).

(IA) The industrial applicability is beyond any doubt.

€

ANNEX

recommended daily allowance or simple fraction thereof.

11. A vitamin delivery product comprising an ingestible freeze-dried mix of at least one vitamin and a carrier.

12. A product according to claim 11, wherein the carrier is a natural material.

13. A product according to Claim 12, wherein the carrier is formed from fruit.

14. A product according to Claim 12 or 13, wherein the carrier is formed from fruit juice and/or fruit pulp.

15. A product according to any of Claims 11 to 14, comprising a blend of vitamins.

16. A product according to any of Claims 11 to 15, wherein the mix is freeze-dried in discrete units.

17. A product according to Claim 16, wherein each unit incorporates a predetermined dose of vitamin.

18. A product according to Claim 17, wherein each unit incorporates a recommended daily allowance.



## PATENT COOPERATION TREATY

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## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

|   |   |  |
|---|---|--|
| Applicant's or agent's file reference<br><b>MPS/6399INT</b> | <b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. |  |
| International application No.<br><b>PCT/GB 97/02863</b>     | International filing date (day/month/year)<br><b>17/10/1997</b>   | (Earliest) Priority Date (day/month/year)<br><b>17/10/1996</b> |
| Applicant<br><b>CULTECH LIMITED et al.</b>                  |   |  |

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

1.  Certain claims were found unsearchable (see Box I).
2.  Unity of invention is lacking (see Box II).
3.  The international application contains disclosure of a **nucleotide and/or amino acid sequence listing** and the international search was carried out on the basis of the sequence listing
  - filed with the international application.
  - furnished by the applicant separately from the international application,
    - but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.
  - Transcribed by this Authority
4. With regard to the title,  the text is approved as submitted by the applicant
  - the text has been established by this Authority to read as follows:
5. With regard to the abstract,
  - the text is approved as submitted by the applicant
  - the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this International Search Report, submit comments to this Authority.
6. The figure of the **drawings** to be published with the abstract is:
 

Figure No. 1  as suggested by the applicant.  None of the figures.

  - because the applicant failed to suggest a figure.
  - because this figure better characterizes the invention.



# INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 97/02863

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 A61K9/20 A23L1/302

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A61K A23L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No. |
|------------|--|-----------------------|
| X          | WO 86 01686 A (V.M.LEWIS ET AL.) 27 March 1986<br>see page 4, line 13-17<br>see page 8, line 3-6<br>see claims 1,2,8,9<br>---  | 1-21                  |
| X          | WO 93 23017 A (JANSSEN PHARMACEUTICA) 25 November 1993<br>see page 6, line 29; claims 1,5,6,8-10<br>---  | 1,2,6-21              |
| A          | DATABASE WPI<br>Section Ch, Week 9148<br>Derwent Publications Ltd., London, GB;<br>Class B07, AN 91-351422<br>XP002056728<br>& SU 1 616 576 A (DAIRY RAW MILLS COMPLX U), 30 December 1990<br>see abstract<br>---- | 1-21                  |

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

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1

Date of the actual completion of the international search

Date of mailing of the international search report

24 February 1998

06/03/1998

Name and mailing address of the ISA

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Authorized officer

Van Moer, A



## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 97/02863

| Patent document cited in search report | Publication date | Patent family member(s)   |  | Publication date   |
|--|------------------|---|--|--|
| WO 8601686 A                           | 27-03-86         | AU 575198 B<br>AU 4698485 A<br>DE 3590446 T<br>FR 2594642 A<br>GB 2176991 A, B<br>US 5110609 A  |  | 21-07-88<br>27-03-86<br>30-10-86<br>28-08-87<br>14-01-87<br>05-05-92   |
| WO 9323017 A                           | 25-11-93         | AU 677198 B<br>AU 4232293 A<br>BG 99158 A<br>CA 2135062 A<br>CN 1085081 A<br>CZ 9402654 A<br>EP 0642334 A<br>FI 945198 A<br>HU 68224 A<br>HU 9500465 A<br>IL 105553 A<br>JP 7508019 T<br>NO 944207 A<br>NZ 252526 A<br>PL 172354 B<br>SK 132094 A<br>US 5558880 A<br>US 5648093 A |  | 17-04-97<br>13-12-93<br>31-05-95<br>25-11-93<br>13-04-94<br>15-02-95<br>15-03-95<br>04-11-94<br>28-06-95<br>28-12-95<br>04-01-98<br>07-09-95<br>04-11-94<br>26-09-95<br>30-09-97<br>11-07-95<br>24-09-96<br>15-07-97 |
| EP 450141 A                            | 09-10-91         | US 5039540 A<br>US 5079018 A<br>CA 2023200 A<br>CY 1923 A<br>DE 69019817 D<br>DE 69019817 T<br>HK 118096 A<br>JP 3086837 A<br>NO 965460 A<br>NO 300085 B  |  | 13-08-91<br>07-01-92<br>15-02-91<br>07-03-97<br>06-07-95<br>05-10-95<br>12-07-96<br>11-04-91<br>15-02-91<br>07-04-97   |



## INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 97/02863

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|----------|--|-----------------------|
| A        | EP 0 450 141 A (NEOPHORE TECHNOLOGIES) 9<br>October 1991<br>see claims<br>-----    | 1-21                  |



Replaced by Article 34

Rec'd on

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15 APR 99

~~recommended daily allowance or simple fraction thereof.~~

11. A method substantially as described above, with reference to the accompanying drawings.
12. A vitamin delivery product comprising an ingestible freeze-dried mix of at least one vitamin and a carrier.
13. A product according to claim 12, wherein the carrier is a natural material.
14. A product according to Claim 13, wherein the carrier is formed from fruit.
15. A product according to Claim 13 or 14, wherein the carrier is formed from fruit juice and/or fruit pulp.
16. A product according to any of Claims 12 to 15, comprising a blend of vitamins.
17. A product according to any of Claims 12 to 16, wherein the mix is freeze-dried in discrete units.
18. A product according to Claim 17, wherein each unit incorporates a predetermined dose of vitamin.
19. A product according to Claim 18, wherein each unit incorporates a recommended daily allowance.
20. A product substantially as described above, with reference to the accompanying drawings.
21. Any novel subject matter or combination including novel subject matter



disclosed, whether or not within the scope of or relating to the same invention  
as any of the preceding claims.



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## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

|   |  |    |  |
|---|--|----|--|
| (51) International Patent Classification 6 :<br><br>A61K 9/20, A23L 1/302   |  | A1 | (11) International Publication Number: <b>WO 98/17258</b><br><br>(43) International Publication Date: 30 April 1998 (30.04.98)   |
| <p>(21) International Application Number: PCT/GB97/02863</p> <p>(22) International Filing Date: 17 October 1997 (17.10.97)</p> <p>(30) Priority Data:<br/>9621614.8 17 October 1996 (17.10.96) GB</p> <p>(71) Applicant (<i>for all designated States except US</i>): CULTECH LIMITED [GB/GB]; York Chambers, York Street, Swansea, West Glamorgan SA1 3NJ (GB).</p> <p>(72) Inventor; and</p> <p>(75) Inventor/Applicant (<i>for US only</i>): PLUMMER, Nigel, Terrence [GB/GB]; 112 Pentrepoeth Road, Swansea, West Glamorgan SA6 6AQ (GB).</p> <p>(74) Agent: SKINNER, Michael, Paul; Swindell &amp; Pearson, 48 Friar Gate, Derby DE1 1GY (GB).</p> |  |    | <p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p><b>Published</b><br/> <i>With international search report.</i><br/> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p> |
| <p>(54) Title: VITAMIN DELIVERY</p> <p>(57) Abstract</p> <p>A vitamin delivery product is formed from a wet carrier (10) and vitamins (14). The wet carrier may be a natural material such as fruit pulp. The vitamin will be in a soluble or solubilised form. The mix (12) is freeze-dried to remove the water content and leave a product with improved taste and texture and containing a vitamin content set by the ratio of the mix (12).</p> <pre> graph TD     Pulp[10 Pulp] --&gt; Mix[12 --- MIX ---]     Vitamins[14 Vitamins] --&gt; Mix   </pre>   |  |    |  |

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Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

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| EE | Estonia                  |    |                                       |    |   |    |                          |

1  
Vitamin Delivery

The present invention relates to vitamin delivery and particularly, but not exclusively, to the preparation of vitamins for delivery to subjects on a voluntary basis without medical prescription.

It is well recognised that various deficiency disorders can arise if vitamin intake is not adequate and for this reason, the health authorities in many countries specify recommended daily allowances (RDAs) of various vitamins for children and adults. Vitamins can be delivered to the subject in a number of ways. The most common form is for a discrete dosage to be ingested in tablet form or by hard or soft gelatine capsules, or by means of powders or liquids. Another common technique of delivering vitamins is by "fortifying" food or beverage products with additional prophylactic components such as vitamins. These food and beverage products may be soft drinks, cereals, dairy products, fruit juices or confectionery.

Capsules, tablets and other discrete dosage forms have the disadvantage that bulking agents (or excipients) are usually required in order to produce a tablet which is sufficiently large for convenient handling and storage. In consequence, the subject taking the capsule or tablet will ingest a considerable amount of bulking agent (which is wholly unnecessary to the prophylactic purpose) along with the desired vitamin content.

For marketing to children in particular, various fruit flavourings, natural colours and fruit powders have been used to produce tablets which are more palatable and therefore more likely to be used with adequate regularity, but considerable volumes of excipient are required.

The present invention seeks to improve vitamin delivery:

The invention provides a method of preparing a vitamin for delivery to a subject, in which at least one vitamin is added to a wet carrier to form a mix which is subsequently freeze-dried, the freeze-dried mix being ingestible.

The term "wet" is used to indicate a form which incorporates more than a negligible amount of water, e.g. a form in which water can be extracted by a freeze-drying process. Preferably the vitamin or vitamins are in solubilised form. Some vitamins are soluble in water; others require treatment to allow emulsification for dispersal in water. Vitamin mixtures are commercially available which contain soluble vitamins and treated insoluble vitamins. The term solubilised is used herein to encompass soluble vitamins, treated insoluble vitamins and mixtures of these.

The wet carrier is preferably a natural material and may be formed from fruit. The wet carrier may comprise fruit juice and/or fruit pulp.

A blend of vitamins may be added as aforesaid. The amount of vitamin added to the carrier may be calculated by reference to the vitamin content or concentration required in the freeze-dried product.

Preferably the mix is freeze-dried in discrete units. The vitamin concentration in the mix is preferably chosen to cause each freeze-dried unit to incorporate a predetermined dose of vitamin. The predetermined dose may be a recommended daily allowance or simple fraction thereof.

The invention also provides a vitamin delivery product comprising an ingestible freeze-dried mix of at least one vitamin and a carrier.

The carrier is preferably a natural material and may be formed from fruit. The carrier may be formed from fruit juice and/or fruit pulp.

Preferably the product comprises a blend of vitamins. The mix is preferably freeze-dried in discrete units, with each unit preferably incorporating a predetermined dose of vitamin, such as a recommended daily allowance.

The present invention will now be described in more detail, by way of example only, and with reference to the accompanying drawings, in which:-

Fig. 1 is a highly schematic diagram illustrating a first stage of a method according to the invention; and

Fig. 2 illustrates a later stage of the method of Fig. 1.

The method to be described is for preparing a vitamin for delivery to a subject, such as a human, and is particularly applicable to vitamin supplements for delivery on a voluntary basis, without medical supervision, such as vitamin delivery products intended to provide a recommended daily allowance of one or more vitamins.

In order to produce the product, a wet carrier is first produced (indicated at 10 in Fig. 1) and introduced into a mixing vessel 12. The wet carrier is preferably a natural material which may be formed from fruit. It is envisaged that fresh or frozen fruit can be formed into a puree or (by removal of fruit pulp) juice to serve as the wet carrier. Typical fruit pulps will have a dry solids content of approximately 10% to 13%, while typical fruit juice will have a dry solids content of approximately 5% to 10%. Concentrates with higher solids contents could be used. The wet carrier 10 is introduced into the mixing vessel 12.

A vitamin or mixture of vitamins is then formed (indicated at 14 in Fig. 1) in a solubilised form and added to the wet carrier already in the mixing vessel 12. Naturally the sequence can be reversed, but it is envisaged that the volume of carrier will exceed the volume of vitamin material and thus that mixing will be facilitated by the introduction of vitamin into the carrier, rather than vice versa.

The contents of the vessel 12 are then mixed to a homogeneous mixture, with agitation or other mixing technique. The solubilised form of the vitamin content enhances the homogeneity of the mixture.

The homogeneous mixture so formed is then dispensed from the vessel 12 into individual cavities 16 of a mould tray 18 (Fig. 2). This task of

dispensing is illustrated schematically by means of a pipette 20 but any alternative arrangement appropriate to the nature of the material and volumes to be dispensed could be used.

The contents of the tray 18 are then freeze-dried to substantially remove the water content thereof. Since freeze-drying involves minimal shrinkage of the dry solids content of the mix, the result is a block of dried material in each mould 16 and having the shape and size of the packet of liquid originally introduced into the mould 16. These dried units can then be removed from the moulds and packaged in an appropriate manner, such as in blister packs for retail sale as a vitamin supplement.

The vitamin delivery product so produced will contain only the dried fruit and vitamin, without excipient. Its taste will be virtually wholly determined by the original fruit content of the carrier 10. This is expected to provide a palatability and mouth feel which are greatly improved over known vitamin supplements and similar products, so that the product described is expected to be well received in the children's market.

It is preferred that each dried unit contains a recommended daily allowance of the vitamin or vitamin blend, or a simple fraction thereof (such as a half, quarter etc.).

The concentration of vitamins required in the mix formed in the vessel 12 can be calculated as follows. First, the vitamin dose to be delivered by each unit is chosen. This might, for instance, be 100mg. Secondly, the volume of the final unit is chosen (perhaps 1ml), largely for practical reasons of handling and user preference. The mix in the vessel 12 is thus required to have a vitamin concentration of one dose per final unit volume. Other factors may influence final choices. For instance, some vitamins have stronger or more unpleasant tastes than others, requiring a higher ratio of fruit content to vitamin content to disguise the vitamin taste. The final unit volume might therefore be increased to assist in this way. The dry solids content of the fruit

component also affects the final product, in that a material with a higher dry solids content is more likely to adequately mask a vitamin taste, than would a material with a lower dry solids content. These factors may affect the choice of fruit material (e.g. the fruit type) or the form (juice, fruit pulp, concentrate etc.). The mouth feel and taste are affected by these choices. A final product can be produced which consists of a honeycomb structure of dried fruit solid, through which the vitamin dose is evenly distributed, and which has an acceptable taste and texture in the mouth.

It is expected that the technique can be applied to a wide variety of natural materials, particularly a wide variety of fruit juices and pulps, and to many different vitamins and vitamin blends, so that a wide range of vitamin delivery products can be produced for many different purposes.

Whilst endeavouring in the foregoing specification to draw attention to those features of the invention believed to be of particular importance it should be understood that the Applicant claims protection in respect of any patentable feature or combination of features hereinbefore referred to and/or shown in the drawings whether or not particular emphasis has been placed thereon.

CLAIMS

1. A method of preparing a vitamin for delivery to a subject, in which at least one vitamin is added to a wet carrier to form a mix which is subsequently freeze-dried, the freeze-dried mix being ingestible.
2. A method according to Claim 1, wherein the vitamin or vitamins are in solubilised form.
3. A method according to Claim 1 or 2, wherein the wet carrier is a natural material.
4. A method according to Claim 3, wherein the wet carrier is formed from fruit.
5. A method according to Claim 3 or 4, wherein the wet carrier comprises fruit juice and/or fruit pulp.
6. A method according to any preceding claim, wherein a blend of vitamins is added as aforesaid.
7. A method according to any preceding claim, wherein the amount of vitamin added to the carrier is calculated by reference to the vitamin content or concentration required in the freeze-dried product.
8. A method according to any preceding claim, wherein the mix is freeze-dried in discrete units.
9. A method according to any preceding claim wherein the vitamin concentration in the mix is chosen to cause each freeze-dried unit to incorporate a predetermined dose of vitamin.
10. A method according to claim 9, wherein the predetermined dose is a

recommended daily allowance or simple fraction thereof.

11. A method substantially as described above, with reference to the accompanying drawings.
12. A vitamin delivery product comprising an ingestible freeze-dried mix of at least one vitamin and a carrier.
13. A product according to claim 12, wherein the carrier is a natural material.
14. A product according to Claim 13, wherein the carrier is formed from fruit.
15. A product according to Claim 13 or 14, wherein the carrier is formed from fruit juice and/or fruit pulp.
16. A product according to any of Claims 12 to 15, comprising a blend of vitamins.
17. A product according to any of Claims 12 to 16, wherein the mix is freeze-dried in discrete units.
18. A product according to Claim 17, wherein each unit incorporates a predetermined dose of vitamin.
19. A product according to Claim 18, wherein each unit incorporates a recommended daily allowance.
20. A product substantially as described above, with reference to the accompanying drawings.
21. Any novel subject matter or combination including novel subject matter

disclosed, whether or not within the scope of or relating to the same invention as any of the preceding claims.

ANNEX

recommended daily allowance or simple fraction thereof.

11. A vitamin delivery product comprising an ingestible freeze-dried mix of at least one vitamin and a carrier.

12. A product according to claim 11, wherein the carrier is a natural material.

13. A product according to Claim 12, wherein the carrier is formed from fruit.

14. A product according to Claim 12 or 13, wherein the carrier is formed from fruit juice and/or fruit pulp.

15. A product according to any of Claims 11 to 14, comprising a blend of vitamins.

16. A product according to any of Claims 11 to 15, wherein the mix is freeze-dried in discrete units.

17. A product according to Claim 16, wherein each unit incorporates a predetermined dose of vitamin.

18. A product according to Claim 17, wherein each unit incorporates a recommended daily allowance.



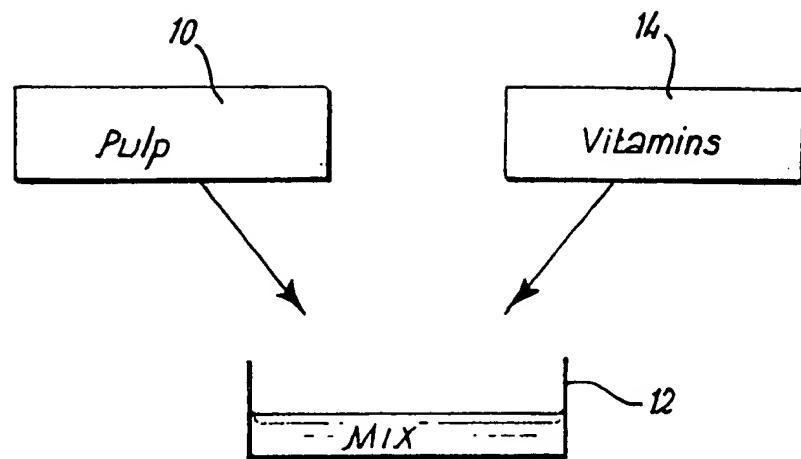


FIG. 1

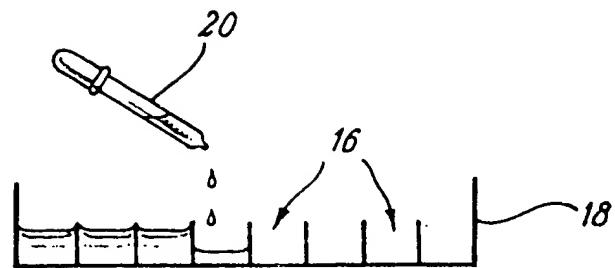


FIG. 2

## INTERNATIONAL SEARCH REPORT

Inte ional Application No  
PCT/GB 97/02863

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 A61K9/20 A23L1/302

According to International Patent Classification(IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 6 A61K A23L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No. |
|------------|--|-----------------------|
| X          | WO 86 01686 A (V.M.LEWIS ET AL.) 27 March 1986<br>see page 4, line 13-17<br>see page 8, line 3-6<br>see claims 1,2,8,9<br>---  | 1-21                  |
| X          | WO 93 23017 A (JANSSEN PHARMACEUTICA) 25 November 1993<br>see page 6, line 29; claims 1,5,6,8-10<br>---  | 1,2,6-21              |
| A          | DATABASE WPI<br>Section Ch, Week 9148<br>Derwent Publications Ltd., London, GB;<br>Class B07, AN 91-351422<br>XP002056728<br>& SU 1 616 576 A (DAIRY RAW MILLS COMPLX U), 30 December 1990<br>see abstract<br>---<br>-/- | 1-21                  |

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

## \* Special categories of cited documents :

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|   |  |
|---|--|
| Date of the actual completion of the international search | Date of mailing of the international search report |
| 24 February 1998  | 06/03/1998   |

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

Inte. onal Application No

PCT/GB 97/02863

| Patent document cited in search report | Publication date | Patent family member(s)   |  | Publication date   |
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## INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 97/02863

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
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| A        | EP 0 450 141 A (NEOPHORE TECHNOLOGIES) 9<br>October 1991<br>see claims<br>-----    | 1-21                  |
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